In the Claims:

1. (Previously Presented) A fiber optic scintillator cell comprising:

a first component formed of a block of scintillating material, the scintillating material configured to output light in response to electromagnetic energy incidence thereon;

a second component formed of a block of optically stimulatable material, the optically stimulatable material configured to receive the light output from the block of scintillating material along a path substantially parallel to a path of electromagnetic energy incidence on the block of scintillating material and output light in a direction substantially parallel to the path of electromagnetic energy incidence, and further configured to output light at an intensity greater than that output by the block of scintillating material; and

wherein the first component and the second component are arranged in a discretely layered stack.

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented) The fiber optic scintillator cell of claim 1 wherein the optically stimulatable material comprises material chargeable to an excited state.

5. (Previously Amended) The fiber optic scintillator cell of claim 4 wherein the scintillating material comprises material capable of absorbing electromagnetic energy and outputting optical emissions in response thereto and wherein the optical emissions cause the second component to output a signal having an intensity exceeding an intensity of the optical emissions received from the first component.

6. (Previously Presented) The fiber optic scintillator cell of claim 5 wherein the optical emissions output from the first component and received by the second component causes a cascading of multiple emissions from the optically stimulatable material.

7. (Original) The fiber optic scintillator cell of claim 1 incorporated into a computed tomography medical imaging diagnostic device.

8. (Original) The fiber optic scintillator cell of claim 1 incorporated into a non-invasive baggage inspection device.

9. (Previously Presented) A detector for a computed tomography system, the detector comprising:

a fiber optic scintillator configured to receive high frequency electromagnetic energy from a first direction having a first intensity and further configured to output light energy in a second direction generally parallel to the first direction having a second intensity, wherein the second intensity exceeds the first intensity; and

a photodiode coupled to the scintillator generally perpendicular to both the first and second directions and configured to detect the light energy output from the fiber optic scintillator along a path that is generally parallel to a path of high frequency electromagnetic energy incidence on the fiber optic scintillator.

10. (Previously Presented) The detector of claim 9 wherein the fiber optic scintillator comprises a mixture of scintillating material and optically stimulatable material.

11. (Previously Presented) The detector of claim 9 wherein the fiber optic scintillator comprises a layer of scintillating material and a layer of optically stimulatable material coupled to the layer of scintillating material.

12. (Previously Presented) The detector of claim 11 wherein the layer of scintillating material is oriented to receive the high frequency electromagnetic energy and the layer of optically stimulatable material is coupled to the photodiode.

13. (Original) The detector of claim 9 wherein the fiber optic scintillator has light intensity greater than that of a scintillator without built-in gain.

14. (Original) The detector of claim 9 incorporated into at least one of a computed tomography medical imaging device and a computed tomography baggage handling device.

15. (Previously Presented) A CT system comprising:

a rotatable gantry having an opening to receive an object to be scanned;

a high frequency electromagnetic energy projection source configured to project a high frequency electromagnetic energy beam toward the object along a projection path;

a scintillator array having a plurality of scintillator cells wherein each cell is configured to detect high frequency electromagnetic energy passing through the object, wherein each cell is configured to output light energy having an intensity exceeding an intensity of the high frequency electromagnetic energy detected by the cell and output the light energy along a path generally parallel to the projection path;

a photodiode array optically coupled to the scintillator array and comprising a plurality of photodiodes configured to detect light output from a corresponding scintillator cell, wherein each photodiode outputs a signal indicative of the light output of the corresponding scintillator cell;

a data acquisition system (DAS) connected to the photodiode array and configured to receive the photodiode outputs; and

an image reconstructor connected to the DAS and configured to reconstruct a CT image of the object from the photodiode outputs received by the DAS.

16. (Original) The CT system of claim 15 further comprising a movable table configured to pass the object through the opening and wherein the object is a medical patient.

17. (Original) The CT system of claim 15 further comprising a conveyor system configured to pass the object through the opening and wherein the object is one of a package and a piece of baggage.

18. (Original) The CT system of claim 17 incorporated into at least one of a mail sorting facility and a baggage handling facility.

19. (Previously Presented) The CT system of claim 15 wherein each scintillator cell comprises a first component of scintillating material and a second component of optically stimulatable material.

20. (Original) The CT system of claim 19 wherein scintillating material includes material capable of triggering a cascading of emissions in the second component.

21. (Original) The CT system of claim 19 wherein the first component and the second component are intermixed with one another forming a single composite structure.

22. (Original) The CT system of claim 19 wherein the scintillator comprises a layer of the first component and a layer of the second component coupled to the layer of the first component.

23. (Previously Presented) A method of manufacturing a fiber optic scintillator cell having optical gain, the method comprising the steps of:

fashioning a first component of scintillating material;

fashioning a second component of optically stimulatable material; and

forming the first component in a single layer, forming the second component in a single layer, and connecting the first component layer and the second component layer to one another in a discretely layered structure.

24. (Previously Presented) The method of claim 23 wherein the second component comprises optically stimulatable material capable of emitting light having an intensity exceeding an intensity of light output by the first component.

25. (Previously Presented) The method of claim 23 further comprising the step of configuring the second component of optically stimulatable material from a material capable of being changed to an excited state by a laser.

26. Cancelled.

27. Cancelled.

28. (Previously Presented) A detector for a CT system, the detector comprising:

a pixilated array of scintillation elements arranged to receive x-rays emitted along an x-ray path from an x-ray emitter toward a subject to be scanned, wherein each scintillator element includes a first component formed of scintillating material and a second component formed of optically stimulatable material; and

a pixilated array of photodiodes coupled to receive light emissions from the pixilated array of scintillation elements along a direction generally parallel to the x-ray path such that each photodiode is configured to output a signal indicative of an intensity of light emitted by a corresponding scintillation element to a decoder.

29. (Currently Amended) The detector of claim 28 wherein the scintillating material comprises material capable of absorbing ~~electromagnetic energy~~x-rays and outputting optical emissions in response thereto and wherein the optical emissions cause the second component to output a signal having an intensity exceeding an intensity of the optical emissions received by the first component.

30. (Previously Presented) The detector of claim 29 wherein the optical emissions output from the first component and received by the second component causes a cascading of multiple emissions from the optically stimulatable material.

31. (Previously Presented) The detector of claim 9 wherein the fiber optic scintillator and the photodiode are each a polyhedron.